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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,411	12/21/2005	Katsuaki Nakamura	F-8809	1648
28107 7590 02/18/2010 JORDAN AND HAMBURG LLP 122 EAST 42ND STREET SUITE 4000 NEW YORK, NY 10168				
EXAMINER YANG, JIE				
ART UNIT		PAPER NUMBER		
1793				
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02/18/2010		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/549,411

**Applicant(s)**

NAKAMURA ET AL.

**Examiner**

JIE YANG

**Art Unit**

1793

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 January 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 87-90 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 87-90 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/C)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/25/2010 has been entered.

### ***Status of the Claims***

Claims 1-86 have been cancelled; claims 87-90 are added as new claims; and claims 87-90 remain for examination. Claim 87 is an independent claim.

### ***Claim Objections***

Claim 87 is objected to because of the following informalities: in the line 11 of claim 87, the term: "using anon-low..." should be corrected as "using a non-low...." Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

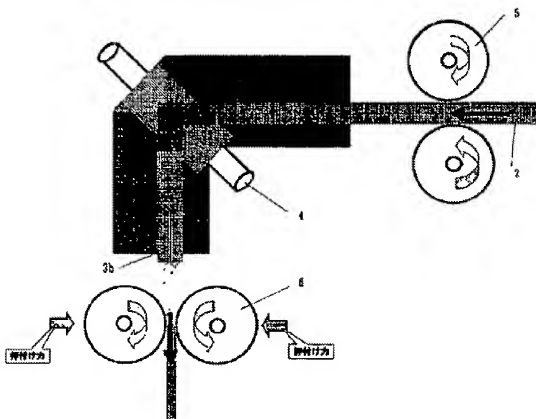
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 87, 88, and 90 are rejected under 35 U.S.C. 102(b) as anticipated by Nakamura (JP 2001-321825 with machine English translation, thereafter JP'825)

Regarding the independent claim 87, JP'825 teaches a working method by which large strain is added and average grain size is micronized by applying large shear deformation to a metallic material and only a part to which the shear deformation is applied is heated (Abstract, Fig.1-5 of JP'825), which reads on the limitations of turning the metal structure of the metal body into a finer grain structure by forming a low deformation resistance region which traverses the metal body by shearing as recited in the instant claim. JP'825 teaches rotation forge may be used for the process (paragraph [0028] of JP'825), which reads on the limitation of shearing including imparting rotation motion which allows the rotation of one non-low deformation resistance region relative to another non-relative deformation resistance region as recited in the instant claims. JP'825 teaches guiding and rolling forging the metallic material before and after locally shearing operation (Fig.1-5, paragraphs [0028]-[0031] of JP'825), which reads on the limitation of forming a non-low deformation resistance region along one side periphery of the low deformation resistance region with a non-low deformation resistance region forming device (Refer to the Fig.4 of JP'825 as shown in following). JP'825 teaches the metal

body moving along the extending direction and, at same time, the non-low deformation region is formed along side peripheries of the low deformation resistance region at a downstream side in the moving direction as recited in the instant claim.

【図4】



Still regarding claim 87, JP'825 teaches cooling for the not heating part of metallic mold by water or air (paragraphs [0022]-[0025] of JP'825), which reads on the cooling device which rapidly cools the metal body before or after non-low

deformation resistance region forming because JP'825 teaches a series shearing devices may be connected with rolling forming (Fig.5 of JP'825).

Regarding the limitation of aging treatment by maintaining the metal body at a temperature which does not turn the metal structure into coarser grain structure in locally lowering the deformation resistance in claim 88, JP'825 teaches that the fine grain metal samples have been pull test under 400°C with remarkable ductility improvement (Paragraph [0027] of JP'825), which meets the limitation of the instant claim because it is a common knowledge that the microstructure of the metal structure strongly relates to the properties of the metal, the high ductility may correspond to a non-coarse grain structure. This position can further refer to the evidence reference Rosales et al (US 3,794,528).

Regarding claim 90, JP'825 teaches non-low deformation regions sandwich the low deformation region (Fig.5 and abstract of JP'825), which meets the limitation of the instant claim. Because JP'825 teaches the similar locally heating, searing, guiding and rolling forging the metallic material before and after locally shearing operation (Fig.1-5, paragraphs [0028]-[0031] of JP'825) as recited in the instant invention,

therefore, the limitation that: the fluctuated relative to another non-low deformation resistance region is fluctuated thus deforming the low deformation resistance region by searing would inherently exist in the process of JP'825. MPEP 2112 III&IV.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 89 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'825 in view of Ozawa (US 6,742,374 B2, thereafter, US'374).

Regarding claim 89, JP'825 does not specify carburizing treating the metal body. However, carburizing treating technique is conventional in the art as evidenced by US'374. US'374 teaches a method of partly reinforcing a workpiece (Abstract of US'374). US'374 teaches the reinforcement-requiring part of the workpiece that has been heated up to a high temperature upon contacting with the forming surface of the forming die makes it possible to partly reinforce the reinforcement-requiring part (Col.5, lines 11-30 of US'374). US'374 further teaches the

heating can be performed in different gas atmospheres, for example, in carbon-included gas such as CO gas atmosphere (Example 1 of US'374), which would result in the carburization as recited in the instant claim. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the conventional techniques, such like carburizing in the process of JP'825 as demonstrated by US'374 in order to obtain desired reinforcement on the reinforcement-requiring part of the workpiece (Abstract and Col.5, lines 11-30 of US'374).

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.



Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 87, 88, and 90 are rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims 1-20 of copending application No. 12/002,951, now updated as US patent 7,559,211 B2.

Regarding claims 87, 88, and 90, Claims 1-20 of US patent 7,559,221 teach the low deformation resistance region is sandwiched between the first and second non-low deformation resistance region (claim 1); shearing the low deformation region (claim 2); twisting motion and rotation (claim 3); and first and second cooling (claim 1). Although the conflicting claims are not identical, they are not patentable distinct from each other because the claims 1-20 of US patent 7,559,221 teach the similar method of working a metal by locally heating to form the low deformation resistance region as disclosed in the instant claims. Thus, no patentable distinction was found in the instant claims compared with claims 1-20 of US patent 7,559,221.

Claim 89 is rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims 1-20 of copending application No. 12/002,951, now updated as US patent 7,559,211 B2 in view of US'374.

Regarding claim 89, claims 1-20 of US patent 7,559,221 do not specify carburizing treating the metal body. However, carburizing treating technique is conventional in the art as evidenced by US'374. US'374 teaches a method of partly reinforcing a workpiece (Abstract of US'374). US'374 teaches the reinforcement-requiring part of the workpiece that has been heated up to a high temperature upon contacting with the forming surface of the forming die makes it possible to partly reinforce the reinforcement-requiring part (Col.5, lines 11-30 of US'374). US'374 further teaches the heating can be performed in different gas atmospheres, for example, in carbon-included gas such as CO gas atmosphere (Example 1 of US'374), which would result in the carburization as recited in the instant claim. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the conventional techniques, such like carburizing in the process of claims 1-20 of US patent 7,559,221 as demonstrated by US'374 in order to obtain desired reinforcement on the reinforcement-requiring part of the workpiece (Abstract and Col.5, lines 11-30 of US'374).

Claims 87, 88, and 90 are rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims 1-35 of copending application No. 10/529,807, now updated as claims 1-4 of US patent 7,637,136 B2.

Regarding claims 87, 88, and 90, claims 1-4 of US patent 7,637,136 teach the low deformation resistance region is sandwiched between the first and second non-low deformation resistance region; shearing the low deformation region; twisting motion; quickly cooling. Although the conflicting claims are not identical, they are not patentable distinct from each other because the claims 1-4 of US patent 7,637,136 teach the similar method of working a metal by locally heating to form the low deformation resistance region as disclosed in the instant claims. Thus, no patentable distinction was found in the instant claims compared with claims 1-4 of US patent 7,637,136.

Claim 89 is rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims 1-4 of US patent 7,637,136 B2 in view of US'374.

Regarding claim 89, claims 1-4 of US patent 7,637,136 do not specify carburizing treating the metal body. However, carburizing treating technique is conventional in the art as evidenced by US'374. US'374 teaches a method of partly

reinforcing a workpiece (Abstract of US'374). US'374 teaches the reinforcement-requiring part of the workpiece that has been heated up to a high temperature upon contacting with the forming surface of the forming die makes it possible to partly reinforce the reinforcement-requiring part (Col.5, lines 11-30 of US'374). US'374 further teaches the heating can be performed in different gas atmospheres, for example, in carbon-included gas such as CO gas atmosphere (Example 1 of US'374), which would result in the carburization as recited in the instant claim. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the conventional techniques, such like carburizing in the process of claims 1-4 of US patent 7,637,136 as demonstrated by US'374 in order to obtain desired reinforcement on the reinforcement-requiring part of the workpiece (Abstract and Col.5, lines 11-30 of US'374).

### ***Response to Arguments***

Applicant's arguments with respect to newly added claims 87-90 have been considered but are moot in view of the new ground of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/  
Supervisory Patent Examiner, Art Unit 1793